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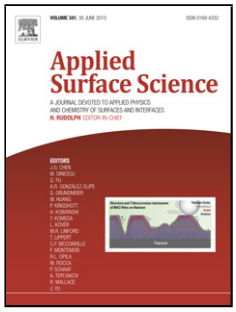

Title: Local structure and morphological evolution of ZnTPP molecules grown on Fe(001)-$p(1 \times 1)$O studied by STM and NEXAFS

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Local structure and morphological evolution of ZnTPP molecules grown on Fe(001)-*p*(1 × 1)O studied by STM and NEXAFS

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Highlights:

- A combined STM and NEXAFS analysis of single- and multilayer ZnTPP film on Fe(001)-*p*(1 × 1)O substrate.
- A (5 × 5) commensurate super-structure is observed by STM, which is composed by 4 domains where the ZnTPP molecules lie almost parallel to the substrate with the molecular skeleton bent.
- NEXAFS reveals that the molecular orientation is stable till the completion of the second layer, then molecules rise up with respect to the underneath layers.

Abstract:

When used as substrates, thin metal-oxide (MO) layers can perturb the physical and chemical properties of molecules in contact with the surface. To study the molecule-MO layer interaction, we focused our investigation on a prototypical interface, namely zinc tetraphenylporphyrin (ZnTPP) film on Fe(001)-*p*(1 × 1)O. In a previous study, we found that no significant change of the electronic structure takes place at the monolayer (ML) coverage either in the core level photoemission spectra or in the highest occupied molecular orbitals (HOMOs). However, molecules showed the